SUPERFUND RESPONSE ACTION PRIORITY PANEL REVIEW FORM

Date Form Completed:

General Site Information

Region:	Region 2	City:	Evesham Twp.	State:	New Jersey
CERCLIS EPA ID:	NJD980529085		CERCLIS Site Name:	Ellis Property Drum Dump	
NPL Status: (P/F/D)	F		Year Listed to NPL:	1983	

Brief Site Description: *(Site Type, Current and Future Land Use, General Site Contaminant and Media Info, Site Area and Location information.)*

The Ellis Property site is located at 150 Sharp Road in Evesham Township, Burlington County, New Jersey. This property was originally a dairy farm, until acquired by Irving Ellis in 1968 who used approximately four of the 36 acres for a drum reconditioning operations—drums were rinsed and resold. Surficial spills and discharges associated with drum reconditioning, and chemical storage are believed to have contributed to contamination of soil and groundwater at the Site. Operations ceased in the late 1970s following a fire.

Currently, the land is vacant, undeveloped, and overgrown with weeds. The property is currently zoned IP--Industrial Park. Future land use is expected to be unrestricted residential. Several farms are located to the north of the Site, while commercial properties are located south of the Site. Several large residential developments are located across the street from the Site. There is potential for immediate redevelopment of portions of the Site on either side of the treatment plant, or the entire Site upon completion of the cleanup.

The original ROD in 1992 addressed contaminated soil and groundwater contamination (VOC) at the Site. The selected remedy consisted of excavation and off-site disposal of 1,400 yd^3 of metals-contaminated soil, and construction of a groundwater collection and treatment (C&T) system to restore the contaminated aquifer. The soil component of the remedy was completed and the groundwater C&T system has been in operation since 2000. However, EPA and NJDEP have identified a source of VOC contamination in the subsurface soils at the Site. These VOCs, predominantly TCE, are contributing to groundwater contamination and are preventing the groundwater collection and treatment system from restoring the aquifer. The groundwater remedy in the original ROD included collection and treatment of contaminated groundwater, and reinjection of the treated groundwater upgradient from the site. Performance monitoring of the groundwater remedy indicates that it has only been partially effective, and recent investigations reveal additional contamination at the Site: the presence of residual sources (Residual Source Area) and an area of contaminated soil (Plume Area). As a result, the goal of the remedy for groundwater, aquifer restoration, cannot be achieved within a reasonable time frame using the existing system.

General Project Information

Type of Action:	Remedial	Site Charging SSID:	02D9
Operable Unit:	2	CERCLIS Action RAT Code:	

Is this the final action for the site that will result in a site construction completion?	X Yes	☐ No
Will implementation of this action result in the Environmental Indicator for Human Exposure being brought under control?	☐ Yes	☒ No

Response Action Summary

Describe briefly site activities conducted in the past or currently underway:

While the removal and remedial response actions taken to date have removed drums containing hazardous wastes and large areas of contaminated soil, residual TCE in localized areas of the Site along the interface of the Hornerstown Formation and Navesink Formation have been consistently identified in monitoring wells during periodic sampling. TCE and other VOCs found in groundwater today were not identified as soil contaminants at the time of the original ROD because they were not detected at significant concentrations.

Five-year reviews were conducted in 2005 and 2010. The five-year reviews concluded that short-term protectiveness of human health and the environment was achieved as there is no exposure to groundwater contamination and ongoing groundwater monitoring continues to be performed. However, through this review process and subsequent investigations, NJDEP and EPA concluded that the groundwater remedy was not performing as intended by the ROD. Specifically, while the groundwater C&T system continues to perform as designed, the groundwater contaminant concentrations in the shallow aquifer have not decreased as expected, and additional remedial measures are needed to achieve the remedial action objectives. Residual TCE contamination acts as an ongoing source to the groundwater. If these source areas are not addressed, aquifer restoration cannot be achieved.

In 2006, EPA performed a Remediation System Evaluation (RSE) of Site operations. The September 2006 RSE report identified several enhancements to improve the performance of the C&T system. In addition, the ROD had called for studies of the Site to identify the presence of dense nonaqueous phase liquids (DNAPLs), typically VOCs that might act as continuing sources of contamination to the groundwater. In 2007, NJDEP conducted a Pre-Design Investigation (PDI) to further delineate the residual source(s) and extent of contamination in soil and groundwater, to evaluate the presence of DNAPLs, and assess potential changes to the groundwater remedy.

The RSE and PDI identified several issues likely to affect overall system performance, including the location of extraction wells in low-permeability soil formations and the presence of the sand channel on the northern part of the Site. The sand channel was believed to limit the effectiveness of the northern portion of the collection trench in adequately intercepting contamination. A cutoff wall was installed in 2012 to isolate the contaminated groundwater from the sand channel and direct it, instead, to the collection trench.

The results of the 2007 PDI identified the following additional areas (not known at the time of the 1992 ROD):

- **Residual Source Area:** The horizontal extent of TCE concentrations exceeding 11,000 µg/L, representing a likely DNAPL source material. This area covers approximately 24,000 square feet of the Site. This area is typically found between 10 and 24 feet bgs and is estimated at approximately 22,500 cubic yards in volume.
- **Plume Area:** The area outside of the residual source area that represents the horizontal extent of TCE concentration greater than 100 µg/L. This area covers approximately 61,000 square feet of the Site. This area is typically found between 10 and 20 feet bgs and is estimated at approximately 45,000 cubic yards in volume.

These volumes do not include shallow soils (down to approximately 10 feet bgs) previously addressed under the original remedy. Combining the residual source area and the plume area, the **Full Area** covers approximately 85,000 square feet of the Site (67,500 cubic yards).

A ROD Amendment was signed in September 2013. The selected remedy includes:

- Excavation and off-site disposal of TCE contamination in the residual source area, and contaminated soil in the plume area;
- Implementation of *in-situ* treatment, where appropriate, to complement excavation;
- Continued operation of the existing C&T system for a period of time (estimated to be one year) to evaluate the effectiveness of continued operation of the system to reduce residual groundwater contamination;
- Monitoring of groundwater; and
- Continuation of institutional controls to prevent exposure to contaminated groundwater until remediation goals are achieved.

The State of New Jersey is operating the C&T system.

The Site is currently in the remedial design phase. Remedial design investigations were conducted by the USACE in the fall of 2014. The Remedial Design schedule is as follows:

- 30% January 2015
- 60% May 2015
- 95% June 2015
- 100% July 2015

Specifically identify the discrete activities and site areas to be considered by this panel evaluation:

The planned remedial action to be considered by the panel includes the excavation of TCE contamination in the Full Area (which consists of the Residual Source Area and contaminated soil in the Plume Area). Where appropriate, *in-situ* treatment in limited areas of the Site will complement excavation. Using an *in-situ* technology for even a small portion of the contaminated soil would reduce soil volumes for off-site transportation and disposal and decrease the volume of groundwater that needs to be extracted and treated.

Briefly describe additional work remaining at the site for construction completion after completion of discrete activities being ranked:

Groundwater monitoring and operation of the C&T system for approximately one year.

Response Action Cost

Total Cost of Proposed Response Action:

($ amount should represent total funding need for new RA funding from national allowance above and beyond those funds anticipated to be utilized through special accounts or State Superfund Contracts.)

$10,518,000 (estimate based on excavation of 67,500 yd^3 of contaminated soil). However, the remedial design indicated that the volume has increased to 81,000 yd^3 of soils, so costs are likely to increase.

Source of Proposed Response Action Cost Amount:

(ROD, 30%, 60%, 90% RD, Contract Bid, USACE estimate, etc…)

The source of the cost information is the ROD and the supporting FFS report.

Breakout of Total Action Cost Planned Annual Need by Fiscal Year:

(If the estimated cost of the response action exceeds $10 million, please provide multiple funding scenarios for

fiscal year needs; general planned annual need scenario, maximum funding scenario, and minimum funding scenario.)

Excavation only: FY 2015 $10,600,000 and FY 2016 $783,000. The response action is expected to be completed in one year.

Scenario #2: FY 2015 $5,000,000; FY 2016 (1st Quarter) $5,600,000; FY 2016 (4th Quarter) 783,000.

Other information or assumptions associated with cost estimates?

The cost estimates are based on excavation without the use of an *in-situ* technology. Data collected during the design phase indicates that the TCE contamination is much deeper and wider than observed in the FFS. The total volume of excavation has increased from 67,500 cubic yards to 81,000 cubic yards, which will increase the total cost of excavation.

Readiness Criteria

1. Date State Superfund Contract or State Cooperative Agreement will be signed (Month)?

September 2015.

2. If Non-Time Critical, is State cost sharing (provide details)?

Yes.

3. If Remedial Action, when will Remedial Design be 95% complete?

June 2015.

4. When will Region be able to obligate money to the site?

September 2015.

5. Estimate when on-site construction activities will begin:

Spring 2016.

6. Has CERCLIS been updated to consistently reflect project cost/readiness information?

Site/Project Name:	**Ellis Property, Evesham Township, NJ**

Criteria #1 - RISKS TO HUMAN POPULATION EXPOSED (Weight Factor = 5)

Describe the exposure scenario(s) driving the risk and remedy. Include risk and exposure information on current/future use, on-site/off-site, media, exposure route, and receptors:

The current land use in the vicinity of the Site is primarily agricultural, residential, and commercial. Future land use is expected to be unrestricted residential land use.

The potential exposure pathways of concern for future land-use include the following: (1) ingestion of VOCs in groundwater, (2) dermal contact with VOCs in groundwater, and (3) inhalation of VOCs in groundwater during showering or bathing.

Data collected since the completion of the 1992 Baseline Human Health Risk Assessment (HHRA) have indicated that elevated levels of TCE are present in groundwater beneath the Site. Since this data was not considered in the original HHRA, a supplemental screening evaluation has been conducted. Results of this evaluation are discussed below.

Recent groundwater data collected in 2011 and 2013 from four onsite extraction points (PW-1, PW-2, MH-1/MH-1R and MH-2) were combined in order to calculate an exposure point concentration (EPC) using EPA's statistical program ProUCL 5.0. The calculated EPC of 32,103 ug/L for TCE was compared to EPA's Regional Screening Levels (RSLs) for tapwater. The RSLs are chemical-specific, risked-based concentrations derived from standardized equations combing exposure information assumptions with available toxicity data. The tapwater RSLs took into account exposure to TCE from the following exposure pathways: ingestion, dermal contact and inhalation of volatiles from groundwater.

Results of this evaluation estimate that the cancer risk for a child and adult resident using the groundwater for potable purposes would equal 6.52×10^{-2}. The noncancer hazard estimates for a child and adult resident are 11,400 and 9,950, respectively. Both the cancer and noncancer hazard exceed EPA's acceptable risk range of 10^{-6} to 10^{-4} and noncancer threshold value of 1. Although using the onsite extraction wells to calculate an EPC is a conservative assumption, it does help to demonstrate the magnitude of the potential cancer risks and noncancer hazards from exposure to TCE contaminated groundwater beneath the site.

Estimate the number of people reasonably anticipated to be exposed in the absence of any future EPA action for each medium for the following time frames:

MEDIUM	<2yrs	<10yrs	>10yrs
Groundwater	500	100,000	500,000
Vapor	20	50	300

Discuss the likelihood that the above exposures will occur:

Groundwater contamination appears to be limited to the shallow aquifer. Although the shallow aquifer does not currently serve as a source of drinking water due to its relatively low productivity, it is a potential source of recharge for the lower aquifers. (A 40-50 foot thick clay layer separates the shallow aquifer from the deeper aquifers). The deeper aquifers, Wenonah Formation and Mount Laurel Sand, are hydraulically connected and form a regional aquifer that is a major source of potable water. Three townships (Medford, Evesham, and Mount Laurel) have municipal supply wells in the vicinity of the Site. Two of these supply wells are located within three miles downgradient from the Site. There are no private wells in the vicinity of the Site using the shallow aquifer.

Vapor intrusion is expected to be an issue if homes or buildings were constructed at the Site.

Other Risk/Exposure Information?

Site/Project Name:	**Ellis Property, Evesham Township, NJ**

Criteria #2 – SITE/CONTAMINANT STABILITY (Weight Factor = 5)

Describe the means/likelihood that contamination could impact other areas/media given current containment:

The primary concern at the Site is that highly elevated levels of TCE in soil and shallow groundwater in the source area continues to migrate uncontrolled from soil to groundwater, and into deeper aquifers that are a major source of municipal water.

Are the contaminants contained in engineered structure(s) that currently prevents migration of contaminants? Is this structure sound and likely to maintain its integrity?

No.

Are the contaminants in a physical form that limits the potential to migrate from the site? Is this physical condition reversible or permanent?

No.

Are there institutional physical controls that currently prevent exposure to contamination? How reliable is it estimated to be?

A Classification Exception Area is in place to restrict the installation of wells in the shallow aquifer. The deep aquifers are not impacted by Site contaminants.

Other information on site/contaminant stability?

Vinyl chloride, PCE, and cis-1,2 DCE are breakdown products of TCE, which are more soluble and have greater mobility than TCE.

Site/Project Name:	**Ellis Property, Evesham Township, NJ**

Criteria #3 – CONTAMINANT CHARACTERISTICS (Weight Factor = 3)

(Concentration, toxicity, and volume or area contaminated above health based levels)

List Principle Contaminants (Please provide average and high concentrations.):

(Provide upper end concentration (e.g. 95% upper confidence level for the mean, as is used in a risk assessment, or maximum value [assuming it is not a true outlier], along with a measure of how values are distributed {e.g. standard deviation} or a central tendency values [e.g., average].)

Contaminant	***Media**	****Concentrations**
TCE	GW	25-590,000 ppb; 14,000,000 ppb (high)
PCE	GW	0.3-51.7 ppb
Vinyl Chloride	GW	1.4-15 ppb
Cis 1,2-DCE	GW	79-240 ppb
TCE	SL	2-98 ppm

*(*Media: AR – Air, SL – Soil, ST – Sediment, GW – Groundwater, SW – Surface Water)*

*(**Concentrations: Provide concentration measure used in the risk assessment and Record of Decision as the basis for the remedy.)*

Describe the characteristics of the contaminant with regards to its inherent toxicity and the significance of the concentrations and amount of the contaminant to site risk. *(Please include the clean up level of the contaminants discussed.)*
The major cancer risk driver identified in the human health risk assessment is TCE. TCE is the most prevalent of these compounds in both soil and groundwater. In the source area, TCE has been detected at levels as high as 98 ppm in soils and 14,000,000 ppb in shallow groundwater. TCE has been classified as a probable human carcinogen and is associated with elevated risks of certain types of cancer in humans (especially kidney, liver, cervix, and lymphatic system). The cleanup goal for TCE in groundwater is 1 µg/L (New Jersey Groundwater Quality Standard) and the cleanup goal for TCE in soil is 1 mg/kg (NJDEP ARAR).
Describe any additional information on contaminant concentrations which could provide a better context for the distribution, amount, and/or extent of site contamination. *(e.g. frequency of detection/outlier concentrations, exposure point concentrations, maximum or average concentration values, etc…..)*
TCE was found predominantly between 10 and 24 feet bgs, as the primary COC at the Site. The significant levels of TCE in the groundwater indicates the existence of a DNAPL source, but such a source has not yet been found. The DNAPL source material constitutes a principal threat waste at the Site. The cause of persistent elevated levels of groundwater contamination in portions of the Site appears to be residual deep soil contamination below the water table. These contaminants, bound tightly in the soils, leach slowly out of the soils, serving as a continuing source of groundwater contamination that is not easily addressed by the existing system.
Other information on contaminant characteristics?

Site/Project Name:	**Ellis Property, Evesham Township, NJ**

Criteria #4 – THREAT TO SIGNIFICANT ENVIRONMENT (Weight Factor = 3)

(Endangered species or their critical habitats, sensitive environmental areas.)

Describe any observed or predicted adverse impacts on ecological receptors including their ecological significance, the likelihood of impacts occurring, and the estimated size of impacted area:

No adverse ecological impacts have been observed in the wetland area. There are no known endangered or threatened species at the site.

Would natural recovery occur if no action was taken? ☐ Yes ☒ No
If yes, estimate how long this would take.

Natural recovery would not be expected to occur in a reasonable timeframe. It is estimated that it would take over 400 years for soil and groundwater to reach protective levels. The TCE DNAPL will continue to act as a source of groundwater contamination, which will migrate uncontrolled throughout the area of the plume and into underlying aquifers. TCE and its degradation products, including vinyl chloride and cis 1,2 DCE, are toxic and mobile and will pose a threat to the underlying drinking water aquifers. The TCE DNAPL source and contaminated soil and groundwater at the Site would persist for hundreds of years, unless action is taken.

Other information on threat to significant environment?

None.

Site/Project Name:	**Ellis Property, Evesham Township, NJ**

Criteria #5 – PROGRAMMATIC CONSIDERATIONS (Weight Factor = 4)

(Innovative technologies, state/community acceptance, environmental justice, redevelopment, construction completion, economic redevelopment.)

Describe the degree to which the community accepts the response action.

The community and its elected officials are extremely interested in the progress of Site remediation and are highly supportive of the remedy to address Site contamination.

The public meeting for the Site was held in July 2013 and was very well attended by local residents and elected officials. The site has been in existence for decades and the community is glad that the Site will finally be cleaned up. The community expressed a preference for Full Area excavation and off-site disposal. There is high community acceptance of the remedy. The communities' primary concern is the number of trucks and traffic through their neighborhood during excavation and backfilling. To address this concern, EPA may complement excavation with an *in-situ* technology, which will decrease the number of trucks.

Describe the degree to which the State accepts the response action.

The State of New Jersey agrees with the selected response action and will provide the necessary matching funds to implement the action.

Describe other programmatic considerations, e.g.; natural resource damage claim pending, Brownfields site, use of innovative technology, construction completion, economic redevelopment, environmental justice, etc…
Completion of the ongoing remedial design is anticipated in July 2015. It is estimated that the remedy would take approximately one year to implement for excavation only; and approximately two years to implement excavation with an *in-situ* technology. Therefore, if funding is provided, it is expected that construction can be completed very quickly. As is the case with many sites, cleanup of this Site will enable redevelopment and a return of the property to productive use.